
Glossary

accessible environment — The area surrounding a nuclear waste disposal site.

alloy — A mixture of two or more metals or a mixture of a metal and something else.

anion — A negatively charged ion.

aquifer — A subsurface rock layer that readily yields water.

backfill — To place removed or new materials into excavated areas.

borehole — A hole drilled into the Earth.

borosilicate glass — A glass used to immobilize liquid high-level waste in a solid form. It is made from sodium silicate containing some boric acid.

brine — Water saturated with salt.

cask — A container for shipping spent nuclear fuel or high-level radioactive waste.

cation — A positively charged ion.

cation exchange resin — An artificial material used for water softeners that displaces positively charged ions from solution and attaches other, less desirable, ions.

cladding — A layer of some metal or alloy bonded to a metal.

Code of Federal Regulations (CFR) — The CFR contains Federal regulations covering various activities including transportation and storage of spent fuel.

compressive strength — The ability of a substance to withstand compression without breaking or fracturing.

containment — The confinement of radioactive materials within a vessel or structure.

contamination — Something that will make other things unfit for use when it comes into contact with them.

conventional notation — In mapping, used to signify degrees (°), minutes ('), and seconds (").

corrosion — Slow dissolving or eating away, especially by chemical action, such as rusting.

criticality — A condition sufficient to sustain a nuclear reaction.

cumulative — Made up of accumulated parts.

degree — One of the divisions marked on a scale of a measuring instrument. There are 360 degrees in a circle. Also used as a measure of temperature.

dehydration — The process of removing water from a substance.

devitrification — A complex process in which cooled, volcanic rock reacts with water and the atmosphere, forming minerals like zeolites and cement; tuff at Yucca Mountain is devitrified volcanic rock and has a vitreous or glass-like appearance.

dike — A body of molten rock (magma) that cuts across the layers of existing rock.

dissolution — The act or process of dissolving.

drift — A horizontal passage underground. A drift follows the “vein” of the material being excavated, as opposed to a crosscut, which intersects it.

effective porosity — The amount of interconnected pore space and fracture openings available for fluids to move through.

encapsulate — To enclose in a capsule.

engulf — To flow over and enclose.

equator — The great circle of a sphere that is perpendicular to the axis.

erosion — The action or process of wearing away by the act of water, wind, or glacial ice.

evapotranspiration — Loss of water from the soil both by evaporation and transpiration from plants growing in the soil.

exfoliation — The process of coming off in thin sheets.

exhumation — The process of removing a substance from beneath the Earth.

fault — A break in the Earth's crust accompanied by movement of the Earth on one side of the break with respect to the other. The movement may be a few inches or many miles.

fluid — A substance (as a liquid or gas) tending to flow or take the shape of its container.

flux — Movement.

fold — A rock layer bent by pressure.

full-scale — Having the usual or normal size.

geohydrology — A science that deals with the character, source, and mode of underground water.

geomorphic — Relating to the form of the Earth or another celestial body.

geophysical pole — Either of the regions adjacent to the extremities of the Earth's rotational axis, the North Pole or the South Pole.

gradient — The rate of change of temperature or pressure.

ground water — Water found underground in porous rock strata and soils, as in a spring.

grout — A thin mortar used to fill in spaces.

host rock — The geologic formation in which the nuclear waste repository is located.

hydraulic — Operated, moved, or affected by means of water.

hydraulic gradient — The direction of ground water flow in response to differences in pressure. From points of higher pressure to points of lower pressure.

hydrology — The study of the distribution, circulation, and properties of the waters of the Earth.

insoluble — Incapable of or having difficulty being dissolved in a liquid.

interlayer water — Water trapped between rock layers, or strata.

interstate highway — A highway connecting two or more States.

interstate bypass — Highway that goes around or to one side of a congested area or obstruction.

ion — Atom, molecule, or molecular fragment carrying a positive or negative electrical charge.

ion exchange — The process in which an ion in solution takes the place of another ion in a natural or man-made material.

ionic solid — Solid that yields a solution of cations and anions when dissolved.

latitude — Angular distance north or south from the Earth's equator measured through 90 degrees.

longitude — Angular distance measured east or west of the prime meridian.

meridian — The great circles of a sphere, such as the Earth, passing through the poles.

mineral — A crystalline chemical compound that occurs naturally; a rock is an assemblage of minerals that determine its characteristics.

minute — Term used in mapping; the 60th part of a degree.

multiple barrier system — The series of barriers inhibiting radionuclide transport from spent fuel or high-level waste placed in a disposal facility; includes both natural and engineered barriers designed to work together.

multi-purpose canister (MPC) — A metal container used to hold spent fuel. Combined with outer casks the MPC could be used to store, transport, and dispose of spent fuel.

notation — A system of characters, symbols, or abbreviated expressions used to express technical facts or quantities.

Nuclear Regulatory Commission (NRC)— A Federal agency charged with the responsibility for regulating the use of nuclear energy and radioactive materials, including the licensing and regulating of storage facilities, shippers, and carriers.

overpack — Any receptacle, wrapper, box, or other structure that is an integral part of a radioactive waste package and is used to enclose a waste container in order to provide additional protection or to meet the requirements of acceptance or isolation criteria for a specific site.

permeability — In hydrology, the capacity of a medium (rock, sediment, or soil) to transmit ground water. Permeability depends on the size and shape of the pores in the medium and how they are interconnected.

plasticity — Capacity for being molded or altered.

polymer — A naturally occurring or manmade substance consisting of large molecules formed from smaller molecules of the same substance.

porosity — The ratio of the total volume of voids or empty space in a rock or solid to its total volume, usually expressed as a percentage.

pour canister — Disposal container for the solid glass form of defense high-level waste. This container will be sealed inside a disposal canister.

prime meridian — The meridian of 0° longitude which runs through the original site of the Royal Observatory in Greenwich, England.

Quaternary Period — Geologic time period beginning at the end of the Tertiary Period and continuing until the present.

radionuclide — A radioactive isotope.

rock — A naturally formed mineral mass.

saturated — To cause to be thoroughly penetrated.

scale — The proportion that a map or model bears to the thing it represents.

second — In mapping, one 60th of a minute. The exact position of a geographic point is described in degrees, minutes, and seconds for both latitude and longitude.

sediment — Matter deposited by water or wind.

shaft — A vertical excavation made for mining rock.

shear — Stress applied parallel to an object.

sill — A body of molten rock (magma) that moves parallel to the existing layers of rock.

simulated — Made to look real.

solubility — A measure of how much of a given substance will dissolve in a liquid. Usually measured in weight per unit volume.

soluble — Capable of being dissolved in a fluid.

sorption — To soak up or stick to.

sorptive capacity — A measure of the ability of the surfaces of a rock to remove dissolved material from solutions passing through the rock. Dissolved material may be removed from solutions by ion exchange, precipitation, or immobilization of water molecules in small pores by friction.

staging — To arrange for and send shipments of spent fuel to a repository.

stakeholder — A person or group of people affected by the outcome of a proposed plan or series of events. In issues concerning the management of nuclear waste, the stakeholders would include utilities, industry, government, and public interest groups.

stratigraphic — Relating to the arrangement of rock layers.

symbol — Something that stands for something else, as the symbols on a map represent actual objects.

Tertiary Period — The period of Earth's development approximately 70,000,000 years ago during which the Alps and the Himalayas were formed and mammals reached dominance on land.

thermal alteration — Changes brought about as the result of increases in temperature.

tuff — A medium-grained rock formed of compacted volcanic ash and dust. The welding process accompanying compaction and cooling gives the rock strength and reduces porosity and permeability.

vermiculite — Lightweight water-absorbent clay mineral.

welded tuff — Hardened volcanic ash in which the constituent glassy shards and other fragments have become welded together, apparently while still hot and plastic after deposition.

zeolite — A generic term for a group of alumino-silicates of sodium, calcium, barium, strontium, and potassium that are characterized by easy and reversible loss of electron-pair bonded water and the property of swelling when heated. Many zeolites have significant capacities for ion-exchange.

zirconium — A steel-gray, strong metallic element. It melts only at high temperatures and is very resistant to corrosion.